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IVERSITY OF ILLINOIS BULLETIN

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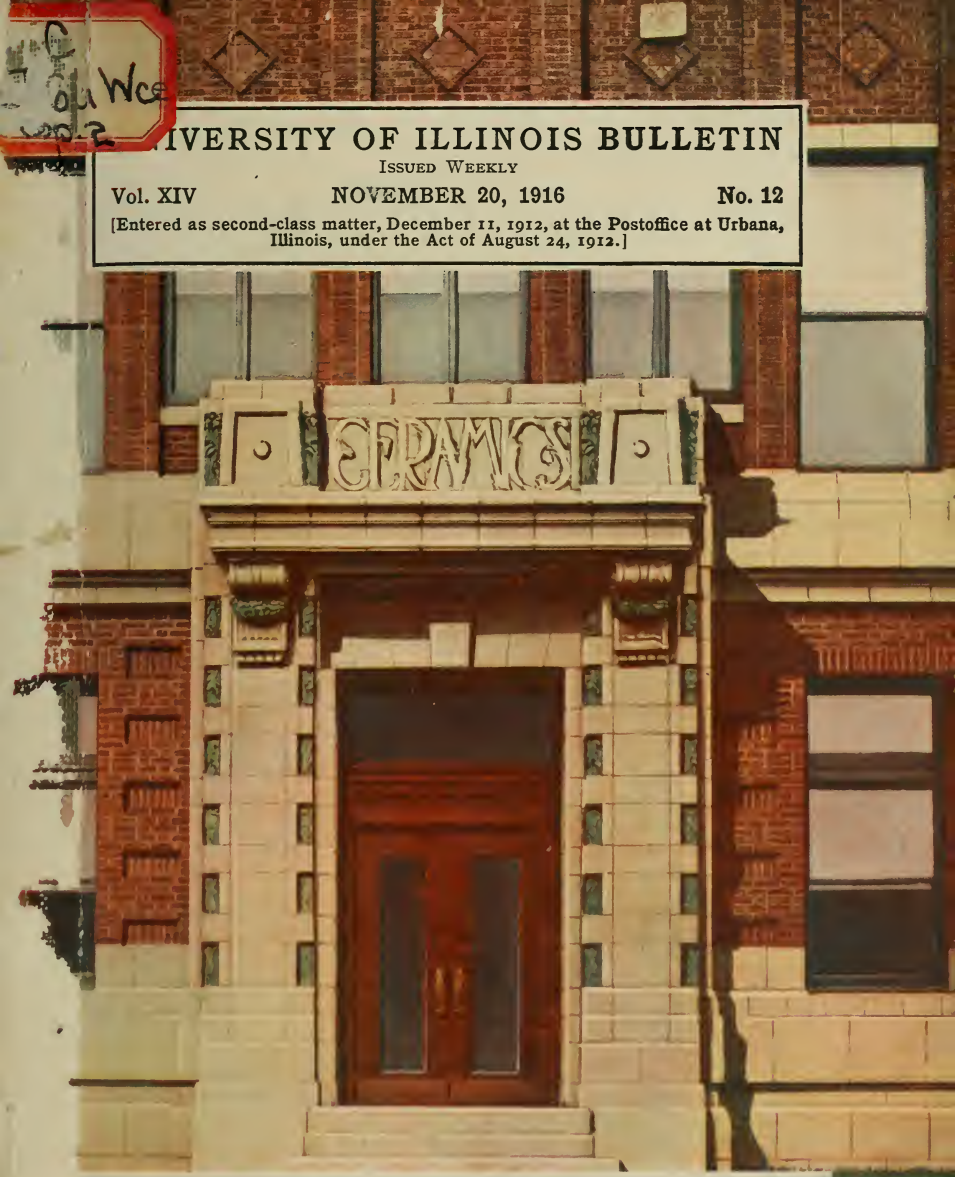


# CERAMIC ENGINEERING BUILDING

## UNIVERSITY OF ILLINOIS

## URBANA——CHAMPAIGN, ILLINOIS

Description of the Building and Program of Dedication, December 6 and 7, 1916

THE TRUSTEES
THE PRESIDENT AND THE FACULTY
OF THE
UNIVERSITY OF ILLINOIS

CORDIALLY INVITE YOU TO ATTEND
THE DEDICATION OF THE

CERAMIC ENGINEERING BUILDING

ON

WEDNESDAY AND THURSDAY
DECEMBER SIXTH AND SEVENTH
NINETEEN HUNDRED SIXTEEN

URBANA, ILLINOIS

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# CERAMIC ENGINEERING BUILDING

## UNIVERSITY OF ILLINOIS

URBANA - - CHAMPAIGN
ILLINOIS

DESCRIPTION OF BUILDING
AND PROGRAM OF DEDICATION
DECEMBER 6 AND 7, 1916

# PROGRAM FOR THE DEDICATION OF THE CERAMIC ENGINEERING BUILDING OF THE UNIVERSITY OF ILLINOIS

## December 6 and 7, 1916

*WEDNESDAY, DECEMBER 6*

1.30 P. M. *In the office of the Department of Ceramic Engineering, Room 203 Ceramic Engineering Building*

Meeting of the Advisory Board of the Department of Ceramic Engineering:

F. W. BUTTERWORTH, Chairman, Danville
A. W. GATES . . . . . Monmouth
W. D. GATES . . . . . Chicago
J. W. STIPES . . . . . Champaign
EBEN RODGERS . . . . . Alton

2.30–4.30 P. M. *At the Ceramic Engineering Building*

Opportunity will be given to all friends of the University to inspect the new building and its laboratories.

## INTRODUCTORY SESSION

8 P. M. *At the University Auditorium*

DR. EDMUND J. JAMES, President of the University, presiding.

Brief Organ Recital:

Guilnant, Grand Chorus in D
Lemare, Andantino in D-Flat
Faulkes, Nocturne in A-Flat
Erb, Triumphal March in D-Flat

J. LAWRENCE ERB, Director of the University School of Music and University Organist.

C.
Illinois
cop. 2



Address: The Ceramic Resources of America.
Dr. S. W. Stratton, Director of the National Bureau of Standards, Washington, D. C.

Address: Science as an Agency in the Development of the Portland Cement Industries.
Mr. J. P. Beck, General Manager of the Portland Cement Association. Chicago, Illinois.

*THURSDAY, DECEMBER 7*

## TECHNICAL SESSION

8.30 A. M. *At the University Auditorium*

Dr. E. W. Washburn, Professor of Ceramic Chemistry and Head of the Department of Ceramic Engineering, presiding.

Address: The Manufacturer's Dependence upon Ceramic Research.
Mr. W. D. Gates, President of the American Terra Cotta and Ceramic Company, and Past President of the American Ceramic Society. Chicago, Illinois.

Discussion: Mr. Ross C. Purdy, Research Engineer of the Norton Company, and Past President of the American Ceramic Society. Worcester, Massachusetts.

Mr. L. E. Barringer, Engineer of Insulations for the General Electric Company, and President of the American Ceramic Society. Schenectady, New York.

Mr. C. H. Kerr, Director of the Research Laboratory of the Pittsburgh Plate Glass Company. Pittsburgh, Pennsylvania.

Address: The Use of Ceramic Materials in Highway Construction.

Mr. W. W. Marr, Chief State Highway Engineer. Springfield, Illinois.

Discussion: Mr. W. P. Blair, Secretary of the National Paving Brick Manufacturers' Association. Cleveland, Ohio.

Mr. G. G. Wooley, Engineer for the Road Bureau of the Portland Cement Association. Chicago, Illinois.

Address: Ceramic Products as Structural Materials.

Mr. H. J. Burt, Structural Engineer. Chicago, Illinois.

Discussion: Mr. A. V. Bleininger, Ceramic Chemist and Head of the Clay Products Laboratory of the U. S. Bureau of Standards. Pittsburgh, Pennsylvania.

Address: The Use of Ceramic Products in the Artistic Embellishment of Buildings.

Mr. Claude Bragdon, Author and Architect. Rochester, New York.

Discussion: Mr. G. C. Mars, Department of Service, Hydraulic-Press Brick Company. St. Louis, Missouri.

Mr. F. Wm. Walker, Superintendent of the Beaver Falls Art Tile Company. Beaver Falls, Pennsylvania.

## SESSION OF DEDICATION

2.30 P. M. *At the University Auditorium.*

Dr. W. F. M. Goss, Dean of the College of Engineering, presiding.

Invocation: Rev. C. R. Adams.

Address on Behalf of the State:

Hon. Edward F. Dunne,
Governor of the State of Illinois.

Address on Behalf of the University:

Hon. W. L. Abbott,
President of the Board of Trustees.

Address: The History of the Ceramic Arts.

Professor Charles F. Binns,
Director of the New York State School of Clay-working and Ceramics, and Past President of the American Ceramic Society.

Address:

President Edmund J. James,
University of Illinois.

Song, "America": Audience.

4 P. M. *At the Ceramic Engineering Building.*

Prayer of Dedication: Rev. J. M. Page.

8 P. M. *In Room 218 Ceramic Engineering Building.*

Installation of the Illinois Student Branch of the American Ceramic Society. Installation exercises in charge of Mr. L. E. Barringer, President of the American Ceramic Society.

FRONT VIEW OF THE CERAMIC ENGINEERING BUILDING

# Department of Ceramic Engineering

UNIVERSITY OF ILLINOIS

## CERAMICS

THE term "ceramics" (Grk. *Κέραμος*, keramos, related to a Sanskrit word meaning "to burn") was formerly employed to designate that portion of the plastic arts which embraces the production and decoration of all objects formed by the molding, modeling and baking of clay. In this sense it is, therefore, practically synonymous with the word "clay-working."

As used in connection with modern industry, however, the term "ceramics" has gradually acquired a much wider significance than this, and is now generally applied to the technology of practically all of the earthy or non-metallic minerals; that is, to the technology of nearly all mineral products except ores, and minerals of organic origin. The ceramic industries thus embrace the manufacture of all kinds of clay products, such as stoneware, china and porcelain ware, brick, tile, sewer pipe and terra cotta; Portland cement, dental cements, lime, plaster, stucco and a variety of gypsum products, and special cements; all of the many varieties of glass and glassware, fused silica and magnesia ware; enameled metals and sanitary ware; a variety of electrical and thermal insulating materials; talc, chalk and slate products; abrasive materials, such as finely divided silica and carborundum and alundum products; rare earth products, such as mantels and tips for gas burners; bricks, crucibles and other

SOUTH WING OF THE CERAMIC ENGINEERING BUILDING

refractory articles manufactured from bauxite, magnesite, chromite, carbon, graphite, asbestos, talc, lime, porcelain, clay, quartz, alundum, sand and many other materials.

From an economic point of view many of the ceramic industries occupy rather a unique position, in that, owing to the practically inexhaustible supplies of their raw materials (clay, sand, limestone, etc.), they increase the wealth of the country without materially diminishing its natural resources. The clay and cement products of the United States for the year 1914 were alone valued at two hundred fifty million dollars; of these, the State of Illinois, which is the fourth state in the Union in the value of its ceramic products, supplied about seven and one-half per cent.

All branches of the ceramic industries are at present experiencing a period of unequaled prosperity and rapid expansion. The continuation of this flourishing condition upon a sound and permanent basis, and the further development of these important branches of the nation's industrial life, must rest largely in the hands of technically trained men. It is for the purpose of doing their share in the training of such men that the people of Illinois have erected this building.

## DESCRIPTION OF THE CERAMIC ENGINEERING BUILDING

The Ceramic Engineering Building, exclusive of the kiln laboratory to which it is connected by means of a corridor, covers a ground area of 67 x 189 feet, with a basement under all. It is a three-story building and is constructed of materials which are representative

CORRIDOR ON THE FIRST FLOOR SHOWING DISPLAY PANELS OF DIFFERENT STYLES OF FACE BRICK

CORRIDOR LEADING TO KILN LABORATORY

of the ceramic arts, high-grade brick, tile, terra cotta, cement and gypsum products being used throughout.

The entire basement is given over to the fan system and storage rooms. The first floor contains the ceramic materials laboratories and an office and private laboratory. On the second floor will be found the offices of the department, offices and private laboratories for two professors, the library, lecture, class and drafting rooms, and several laboratories devoted to chemical and physical work and to high temperature investigations. For the present, the offices and laboratories of the Geological Survey occupy the third story of the building, and a portion of the first floor is also given over to the concrete testing laboratory. Space is provided on a fourth floor for the distilling apparatus which furnishes a supply of pure distilled water for the building.

The walls of the main corridor on the first floor have been decorated with display panels showing different styles of face brick. These panels were donated and erected by the following firms:

Western Brick Company, Danville, Illinois.

Sheldon Brick Company, Urbana, Illinois.

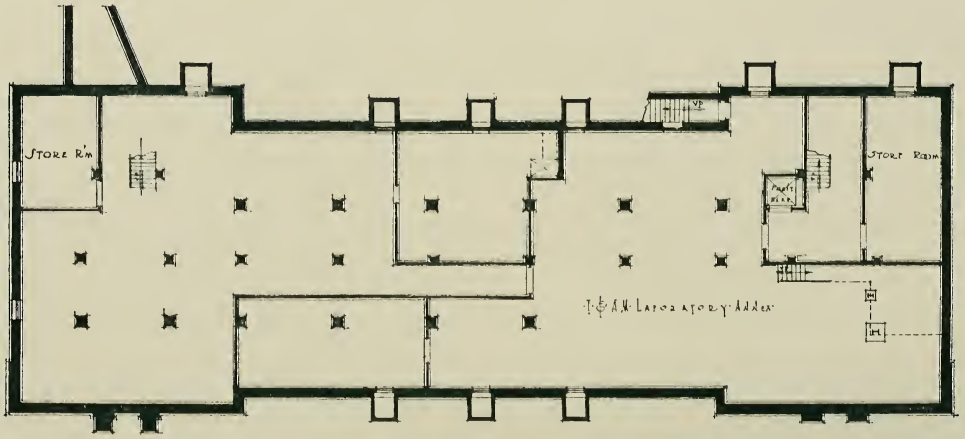
Hydraulic-Press Brick Company, St. Louis, Missouri; Indianapolis, Indiana; Aledo, Illinois.

West Salem Hollow Brick and Tile Company, West Salem, Illinois.

Streator Brick Company, Streator, Illinois.

Decatur Brick Company, Decatur, Illinois.

Acme Brick Company, Cayuga, Indiana.




Scale $\frac{1}{8}'' = 1'\text{-}0''$

BASEMENT FLOOR PLAN, CERAMIC ENGINEERING BUILDING

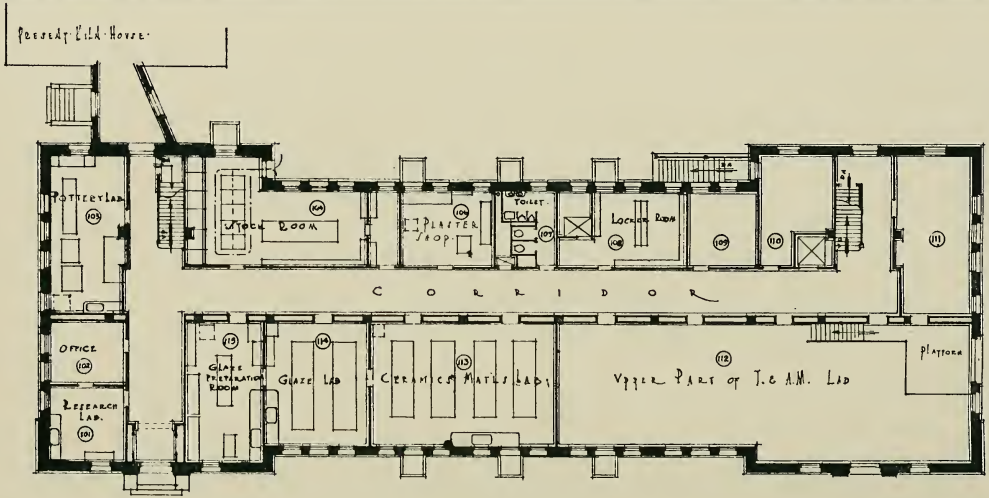
Brazil Clay Company, Brazil, Indiana.
La Salle Pressed Brick Company, La Salle, Illinois.
C. E. Poston, Attica, Indiana.

## THE LABORATORIES AND THEIR EQUIPMENT

The laboratories of the building are provided with outlets for water, gas, compressed air, vacuum, distilled water, and alternating and direct current.

The laboratories on the first floor are arranged for the preparation and handling of ceramic materials. In the store room (104) the supplies of ceramic materials are stored in large bins ranging in capacity from two tons to 100 pounds. The ceramic materials laboratory (113) is equipped with laboratory tables and lockers to meet the needs of forty students. Adjoining it is the glaze laboratory (114) with tables and lockers for twenty-four students. The glaze preparation laboratory (115) is provided with machinery for grinding and mixing slips and glazes. This equipment consists of ball mill racks for the accommodation of twenty 1-gallon jars; two double racks for 5-gallon jars; three 12-inch Buhrstone mills; three power mortar mills and eight slip blungers; and a large porcelain lined ball mill; all driven from a line shaft.

The pottery laboratory (103) is provided with the necessary equipment for the manufacture of tile and of table ware. It includes a mixing unit consisting of a blunger and agitator, a lawn, and a filter press with a capacity of thirty to forty pounds of clay per charge. A pulldown and jigger with heads and rings suitable



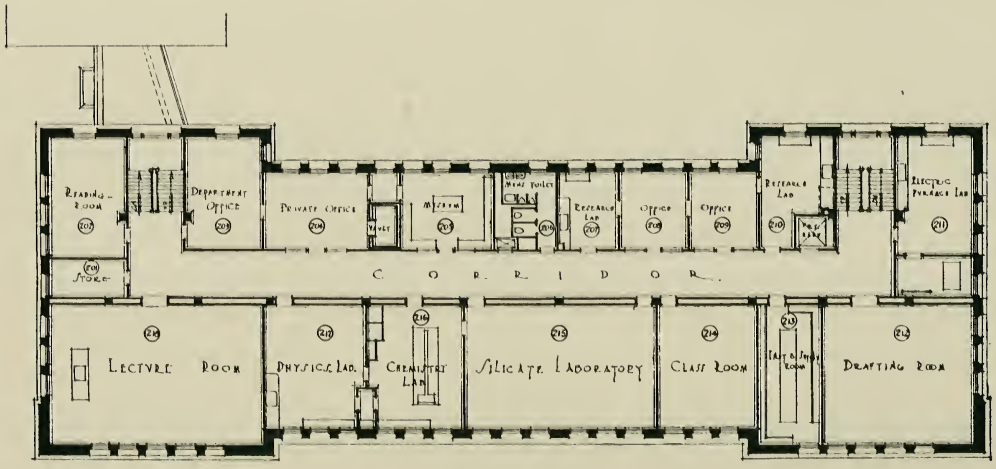

SCALE $\frac{1}{8}'' = 1'\text{-}0''$

FIRST FLOOR PLAN, CERAMIC ENGINEERING BUILDING

for the making of large pieces of hollow ware, and two friction jolleys with heads and rings for the manufacture of medium and small sizes of flat and hollow ware are also provided. One of these is arranged for use as a thrower's wheel. The other apparatus in this laboratory includes a tile press with dies for the preparation of ware by the dust process; a potter's lathe of the most modern type; bench whirlers; and a decorator's printing press. A large drying closet and a damp closet are also included in the equipment for the work in pottery.

The plaster shop (106) is intended for the preparation of models and molds for pottery and other clay wares. It is equipped with a bench whirler, two potter's wheels and a potter's lathe. Concrete topped tables for modeling terra cotta forms and casting molds, together with shelving for the storage of models and molds, complete the equipment of this room.

The kiln laboratory, which is in a separate structure connected with the main building by a corridor, is equipped with two open fire downdraft test kilns with chambers of one cubic yard capacity, and one muffle kiln with two-thirds of a cubic yard capacity. These kilns are fired with coal or coke. A round downdraft kiln with a two-foot chamber, a load-test kiln for testing refractories under load at high temperatures, and a muffle furnace for enameling and decorating work are arranged for oil firing. A battery of four gas fired frit furnaces, a small gas fired test kiln with a preheating arrangement for the gas and air, a Monarch tilting

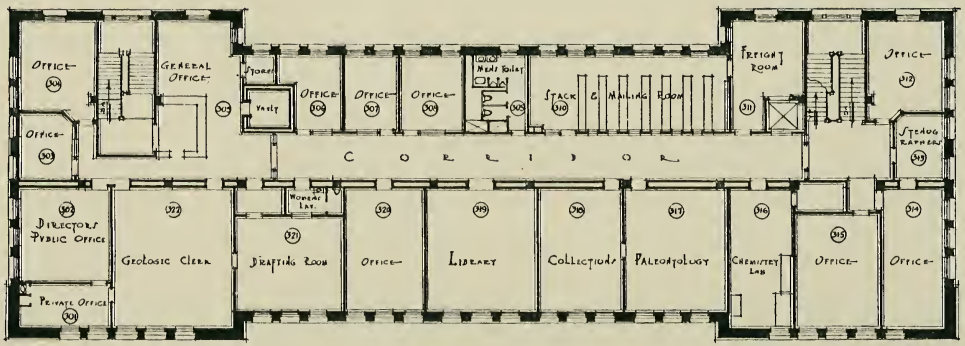



Scale $\frac{1}{8}$" = 1'-0"

SECOND FLOOR PLAN, CERAMIC ENGINEERING BUILDING

furnace for the fusion of glass batches, and several small pot furnaces for fusion work are also provided. The various kilns and furnaces are connected by underground flues to a 60-foot stack. A small room adjoining the kiln laboratory is provided with indicating and recording instruments which are connected to thermocouples in the kilns. A Simmance-Abady carbon-dioxide recorder is connected with the three coal fired kilns for the study of atmospheric conditions in the firing. A steam heated dryer is provided for the drying of wares and test pieces.

The machinery equipment of the kiln laboratory consists of a 5-foot dry pan elevator and a Jeffrey shaking screen; a 4-compartment steel bin for storing ground clay above the 8-foot double shaft pug mill; a 5-foot wet pan; an auger brick machine with a capacity of 6,000 bricks per day with a take-off belt and a hand power side delivery cutting table; a miniature auger brick machine; a hand power repress; and a hand power dry press for full sized brick as well as a miniature dry press for briquettes; two hand-power blunger machines for briquette molding; a saggar press; a tile press; a 14 x 28-inch iron ball mill; a set of laboratory rolls and a small jaw crusher. An air compressor is provided for special needs and a rotary blower and oil pump supply the oil burners. The kiln building also provides bins for the storage of fuel, clays and refractories; and a small classroom and a laboratory equipped with tables for the testing of clays and specimens burned in the kilns.




Scale $\frac{1}{8}'' = 1'\text{-}0''$

THIRD FLOOR PLAN, CERAMIC ENGINEERING BUILDING

The department library (202) is provided with a well selected set of books dealing with ceramics and its allied sciences, as well as complete sets of the ceramic journals.

The museum (205) has a small but growing collection of ceramic wares and samples of raw materials.

The lecture room (218) has seating capacity for ninety students, and is equipped with the necessary lecture table and lantern facilities. Wall cases for the storage of mineral and clay samples and specimens required for class demonstration, will be provided in this room.

The drafting room (212) provides space for the accommodation of 16 students, as well as filing cases for the storage of plans and blueprints of the various types of industrial plants.

The chemical, physical and research laboratories on the second floor (207, 210, 215, 216, 217) are equipped with the usual laboratory desks and other equipment necessary in such laboratories. The high temperature laboratory (215) is intended for research work with electric furnaces. A 5-kilowatt motor generator set and a 10-kilowatt transformer are provided in this room.

The department also possesses a variety of measuring instruments, such as indicating and recording pyrometers and optical pyrometers for the measurement of high temperatures, amperemeters, voltmeters, various types of electric furnaces and petrographic microscopes for general research work.

The buildings and equipment of the Ceramic Engi-

THE LIBRARY AND READING ROOM

THE DRAFTING ROOM

neering Department represent an investment of about two hundred thousand dollars.

## THE DEPARTMENT OF CERAMIC ENGINEERING

The purposes and functions of this department are fourfold:

*First.* It undertakes, upon the basis of a four-year curriculum in ceramic engineering, to train engineers for the direction and control of the various operations connected with the ceramic or clay-working industries and for the designing and construction of the necessary industrial plants. The courses included in the curriculum of ceramic engineering provide the necessary foundational training in mathematics and geology and in the two sciences, physics and chemistry, upon which ceramic engineering is largely based. In addition to the regular courses in general and analytical chemistry, which are given by the Department of Chemistry, more specialized courses in ceramic chemistry are given in the Department of Ceramic Engineering. These courses deal with the identification, classification and properties of ceramic raw materials; the composition and properties of the ceramic body and of glazes; the chemistry and technology of glass and enamels and of cements, limes and plasters; and the special applications of physics and chemistry to the materials and processes of the clay industries. General engineering courses in mechanics, mechanical engineering and mining engineering and in surveying are provided by the College of Engineering, and special engineering

A CORNER IN ONE OF THE RESEARCH LABORATORIES

VIEW OF THE CERAMIC MATERIALS LABORATORY

courses dealing with the planning, construction and operation of the various types of industrial plants required in the different ceramic industries, and also special courses describing the machinery and operations involved in the mining of the ceramic raw materials and in the molding and shaping of the products, are offered by the Department of Ceramic Engineering. In addition to the more technical courses described above, the curriculum in Ceramic Engineering also makes provision for training in the English language and literature, and in at least one foreign language. On completion of the four-year curriculum, the student is given the degree of Bachelor of Science in Ceramic Engineering.

In addition to the undergraduate curriculum in Ceramic Engineering, the department also undertakes, by means of more advanced courses in ceramics and in its underlying sciences, to provide the necessary training to qualify its students to attack successfully and solve the manifold problems and difficulties which arise in the various ceramic industries, and to improve existing products and discover new ones. The graduate work offered by the department leads to the Master's degree and to the Doctor's degree in either chemistry (Ceramic Chemistry), or engineering, according to the lines of work pursued. Scholarships and Fellowships are available for properly qualified students pursuing graduate courses in the department.*

*For further information concerning the courses in Ceramics and Ceramic Engineering, apply to The Registrar, University of Illinois.

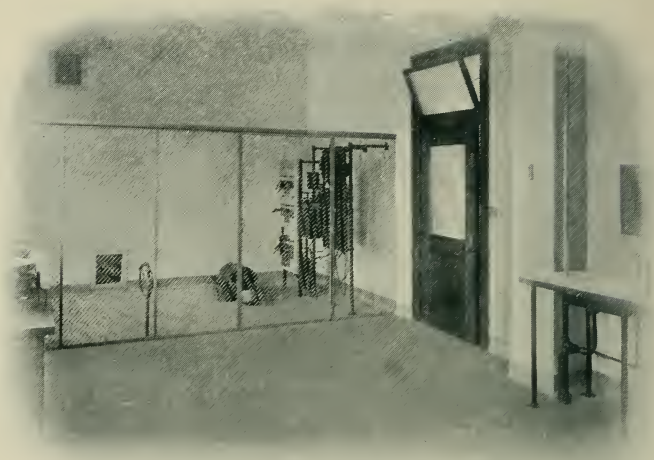
EAST END OF KILN LABORATORY SHOWING BRICK AND MOLDING MACHINERY

A third feature of the educational work of the department is an annual Short Course of two weeks' duration devoted to practical instruction, and organized for the benefit of superintendents, foremen, workmen and others actively engaged in industrial work who are unable to take advantage of the more extensive training provided in the four-year curriculum.

*Second.* Through the cultivation of intimate relations with the clay workers of the state, the department endeavors, to the extent which its resources will permit, to give assistance and advice in connection with scientific problems which arise in those industries. These relations with the industries have reciprocal advantages in that by means of a yearly three-day inspection trip through different types of clay working plants, the advanced students in the curriculum of Ceramic Engineering are enabled to come in direct contact with ceramic processes on a large scale and to secure a conception of industrial work which would not be possible in any other way.

*Third.* In co-operation with the State Geological Survey, the department has undertaken a systematic study of all of the ceramic resources of the state, with the purpose of determining the extent, character and value of these resources and the directions in which they may be most effectively developed.

*Fourth.* A fourth important function of the department is the prosecution of research, not only in special ceramic problems, but also in the broader and more fundamental scientific problems which underly the



CORNER IN THE HIGH TEMPERATURE LABORATORY

WEST END OF THE KILN LABORATORY SHOWING THREE COAL FIRED AND ONE OIL FIRED TEST KILNS

behavior of ceramic materials in the various processes to which they are subjected during manufacture. This portion of its labors is carried out in conjunction with the Engineering Experiment Station of the University.

## STAFF OF THE DEPARTMENT OF CERAMIC ENGINEERING

EDMUND JANES JAMES, PH. D., LL. D.
PRESIDENT OF THE UNIVERSITY
WILLIAM FREEMAN MYRICK GOSS, M. S., D. ENG.
DEAN OF THE COLLEGE OF ENGINEERING

EDWARD WIGHT WASHBURN, Professor of Ceramic Chemistry and Head of the Department of Ceramic Engineering. Graduated from the Massachusetts Institute of Technology in 1905 with the degree of Bachelor of Science and received the degree of Doctor of Philosophy in 1908; associated with the Department of Chemistry of the University of Illinois for the past eight years as Professor of Physical Chemistry.

CULLEN WARNER PARMELEE, Professor of Ceramic Engineering. Graduated from Rutger's College in 1896 with the degree of Bachelor of Science; honor student in Chemistry; associated with Rutger's College in Chemistry and Ceramics since 1901, and for the past ten years Professor of Ceramics and Director of the Department of Ceramics; sustained important consulting relations with various potteries; member of Phi Beta Kappa and Past President of the American Ceramic Society.

RALPH KENT HURSH, Assistant Professor of Ceramic Engineering, graduated from the University of Illinois in Mechanical Engineering in 1908. During the period

1908 to 1911 associated with the U. S. Geological Survey and U. S. Bureau of Standards. Since 1911 associated with the Department of Ceramic Engineering, University of Illinois.

Howard Clinton Arnold, Instructor in Ceramic Engineering, graduated from the University of Illinois in 1914 with the degree of Bachelor of Science, and received the degree of Master of Arts from Ohio State University in 1916; recipient of preliminary and special honors; member of Sigma Chi; from 1914 to 1916 secretary of the Ceramic Supply and Construction Company, Columbus, Ohio.

## LIST OF BULLETINS PUBLISHED BY THE DEPARTMENT OF CERAMIC ENGINEERING

| | |
|---|---|
| No. 2, Part 1. | Fritted Glazes, by R. C. Purdy and H. B. Fox. |
| No. 2, Part 2. | Crystalline Glazes, by R. C. Purdy and J. F. Krehbiel. |
| No. 3. | Pyro-Chemical and Physical Behavior of Clays, by R. C. Purdy and J. K. Moore. |
| No. 4. | Efflorescence of Brick, by J. C. Jones. |
| No. 6. | Effect of Repeated Freezing and Thawing on Brick Burned to Different Degrees of Hardness, by J. C. Jones. |
| No. 7. | The Influence of Fluxes and Non-Fluxes upon the Clays in Porosity, and Specific Gravity of Some Clays, by A. V. Bleininger and J. K. Moore. |
| No. 8. | A Study of the Heat Distribution in Four Industrial Kilns, by A. V. Bleininger. |
| No. 9. | A Cheap Enamel for Stoneware, by R. T. Stull; The Viscosity of Clay Slips, by A. V. Bleininger; Notes on Some Fusion Curves, by A. V. Bleininger. |

No. 10. A Method Making Possible the Utilization of an Illinois Joint Clay, by A. V. Bleininger and F. E. Layman; An Attempt to Determine the Amount of Heat Utilized from a Downdraft Kiln by the Waste Heat Drying System, by A. V. Bleininger.

No. 11, Part 2. A Cheap Enamel for Stoneware, by R. T. Stull.

No. 12. Notes on the Manufacture of Enamel Brick with Some Investigations on Enamel Brick Slips, by R. T. Stull.

No. 13. A Study of the Vitrification Range and Di-Electric Behavior of Some Porcelains, by A. V. Bleininger and R. T. Stull.

No. 14. Opalescence and the Function of Boric Acid in the Glaze, by R. T. Stull and B. S. Radcliffe.

No. 15. Some Chemical and Physical Changes in Clays Due to the Influence of Heat, by J. M. Knote.

No. 16. Cobalt Colors Other Than Blue, by R. T. Stull and G. H. Baldwin; Influence of Variable Silica and Alumina on Porcelain Glazes of Constant RO, by R. T. Stull; Investigations on the Di-Electric Strength of Some Porcelains, by B. S. Radcliffe.

No. 17. The Effect of Acids and Alkalies Upon Clay in the Plastic Stage, by A. V. Bleininger and C. E. Fulton; Note on the Dissociation of Calcium Hydrate, by R. K. Hursh; Notes on the Relation Between Pre-Heating Temperature and Volume Shrinkage, by R. K. Hursh.

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|---|---|
| No. 18. | A Thermal Study of Boric Acid-Silica Mixtures, by A. V. Bleininger and Paul Teetor; The Replacement of Tin Oxide by Antimony Oxide in Enamels for Cast Iron, by R. E. Brown. |
| No. 19. | Investigation on Iron Ore Cements, by Arthur E. Williams. |
| No. 20. | Designs of Seven Test Kilns, by R. T. Stull and R. K. Hursh. |
| No. 21. | Deformation Temperatures of Some Porcelain Glazes, by R. T. Stull and W. L. Howatt; A Type of Crystalline Glaze at Cone 3, by C. C. Rand and H. G. Schurecht. |
| No. 22. | The Influence of Chlorides of Calcium and Iron when Precipitated in a Porcelain Body; Some Cobalt-Uranium Colors, by B. S. Radcliffe. |
| No. 23. | Notes on the Development of the Ruby Color in Glass, by A. E. Williams. |

# THE UNIVERSITY OF ILLINOIS

## THE STATE UNIVERSITY

Urbana

EDMUND J. JAMES, Ph. D., LL. D., President

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**THE UNIVERSITY INCLUDES THE FOLLOWING DEPARTMENTS:**

**The Graduate School**

**The College of Liberal Arts and Sciences** (Ancient and Modern Languages and Literatures; History, Economics, Political Science, Sociology; Philosophy, Psychology, Education; Mathematics; Astronomy; Geology; Physics; Chemistry; Botany, Zoology, Entomology; Physiology; Art and Design)

**The College of Commerce and Business Administration** (General Business, Banking, Insurance, Accountancy, Railway Administration, Foreign Commerce; Courses for Commercial Teachers and Commercial and Civic Secretaries)

**The College of Engineering** (Architecture; Architectural, Ceramic, Civil, Electrical, Mechanical, Mining, Municipal and Sanitary, and Railway Engineering)

**The College of Agriculture** (Agronomy; Animal Husbandry; Dairy Husbandry; Horticulture and Landscape Gardening; Agricultural Extension; Teachers' Course; Household Science)

**The College of Law** (three years' course)

**The School of Education**

**The Course in Journalism**

**The Courses in Chemistry and Chemical Engineering**

**The School of Railway Engineering and Administration**

**The School of Music** (four years' course)

**The School of Library Science** (two years' course)

**The College of Medicine** (in Chicago)

**The College of Dentistry** (in Chicago)

**The School of Pharmacy** (in Chicago; Ph. G. and Ph. C. courses)

**The Summer Session** (eight weeks)

**Experiment Stations and Scientific Bureaus:** U. S. Agricultural Experiment Station; Engineering Experiment Station; State Laboratory of Natural History; State Entomologist's Office; Biological Experiment Station on Illinois River; State Water Survey; State Geological Survey; Mine Rescue Station.

The library collections contain (March 1, 1916) 355,557 volumes and 86,685 pamphlets.

For catalogs and information address

THE REGISTRAR
Urbana, Illinois

A PRODUCT OF THE CERAMIC ART

Vase with "Apple-Green" Ground, height 13½ inches
J. Cockshut Collection

UNIVERSITY OF ILLINOIS-URBANA
3 0112 039700809